# GENERAL HYDROLOGIC CONDITIONS FOR 2001

## COLORADO RIVER

Normally, there is no measurable amount of runoff from the portion of the Colorado River basin in the United States and Mexico below Hoover Dam, not including Bill Williams and Gila Rivers. There was no significant amount in 2001. In the lower basin of the Colorado River in Mexico, from Morelos Diversion Dam to the Gulf of California, the average precipitation during 2001 measured at 3 index stations was 64 millimeters, compared to an average of 52 millimeters during the last 43 years (1959 to 2001).

The flow of the Colorado River reaching Imperial Dam was 7,520,705 thousand cubic meters, about 76% of the 67-year average (1935-2001) of 9,894,564 thousand cubic meters. At the Northerly International Boundary, the total flow of the river during 2001 was 1,932,214 thousand cubic meters, about 41% of the 1935-2001 average of 4,662,275 thousand cubic meters. At the Southerly International Boundary, the flow during 2001 was 122,051 thousand cubic meters, about 4% of the 1935-2001 average of 3,147,960 thousand cubic meters.

The total of all flows of the Colorado River entering Mexico in 2001 amounted to 2,225,609 thousand cubic meters, 42% of the 1935-2001 average of 5,238,297 thousand cubic meters, as measured 1) in the Colorado River at the Northerly International Boundary, 2) in the Wellton-Mohawk Main Outlet Drain Extension near Morelos Dam, 3) in the wasteways that discharge into the limitrophe section of the river from the United States bank, 4) in the canal which discharges waste and drainage waters from the Yuma Project across the southerly land boundary into Mexico near San Luis, Arizona, 5) in the Wellton-Mohawk Bypass Drain at the southerly land boundary near San Luis, Arizona, and 6) from the 242 Well Field near San Luis, Arizona.

During 2001, other waters arrived at the Mexican points of diversion and amounted to 247,408 thousand cubic meters. These waters consisted mainly of excess waters released from reservoirs on the Colorado River. A maximum instantaneous flow of 276 cubic meters per second occurred in the Colorado River at the Northerly International Boundary station on February 28, 2001.

Stored waters at the end of the year in the three major reservoirs on the Colorado River below Lee's Ferry amounted to 27,137.2 million cubic meters, 77% of the usable capacity of 35,263.2 million cubic meters. The greater part (24,416.7 million cubic meters) of the storage was contained in Lake Mead (Hoover Dam). There were no reported shortages of Colorado River water for irrigation during 2001 due to drought or accident to the irrigation system.

The total reported area irrigated from waters of the Colorado River below Imperial Dam in 2001 was 423,083 hectares; 303,231 hectares in the United States and 119,852 hectares in Mexico. An estimated 33% of the total area irrigated in Mexico is served by pumping from ground water.

## TIJUANA RIVER BASIN

During 2001, the temperatures at Barrett Dam, California (elevation 533.40 meters) in the upper portion of the basin in the United States averaged 17.5 degrees Celsius, 0.9 degree Celsius above the 71-year mean. In the extreme upper portion of the basin in Mexico at El Pinal, Baja California (elevation 1394.96 meters), the recorded temperatures during the year could not be determined due to incomplete records. At Rodriguez Dam, Baja California (elevation 139.90 meters), the recorded temperatures averaged 20 degrees Celsius, about 1 degree Celsius below the normal for many years.

At Barrett Dam, in the upper portion of the basin in the United States, the recorded precipitation was 349 millimeters, 78% of normal; and at Lower Otay Dam near the lower end of the basin, 264 millimeters, or 93% of normal. The recorded precipitation at El Pinal in the upper portion of the basin in Mexico could not be determined due to incomplete records. At Rodriguez Dam, in the lower portion of the basin in Mexico, the recorded precipitation was 289 millimeters, 124% of the 63-year average.

Runoff above Barrett and Rodriguez Reservoirs during 2001 was about 26% of normal. Above Morena Reservoir, the runoff was 5,310 thousand cubic meters, or about 41% of the 65-year 1937-2001 mean of 12,946 thousand cubic meters. Above Barrett Reservoir, the runoff was 13,176 thousand cubic meters, or about 76% of the 65-year 1937-2001 mean of 17,269 thousand cubic meters. At Rodriguez Reservoir, there was no measurable runoff during the year.

The flow of the Tijuana River at the international boundary was 14,423 thousand cubic meters during 2001.

## WHITEWATER DRAW

During 2001, the average annual temperature over the watershed was 0.1 degrees Celsius above normal, while the annual precipitation was 72% of normal. Runoff for the year at the gaging station near Douglas, Arizona, was 771 thousand cubic meters, or about 12% of average.